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Abstract

The linguistic intergroup bias is a phenomenon where people use more abstract language to talk positively about in-groups and negatively about out-groups (Maass, Salvi, Arcuri, & Semin, 1989). This has been established for many in-groups, but has not been extended to age-related stereotypes. This study extended the linguistic intergroup bias to attitudes towards older adults. It was predicted that statements about what participants liked about their peers and disliked about older adults would be more abstract than statements about what participants disliked about their peers and liked about older adults. Results supported these predictions. Also, a new measure of linguistic abstractness was tested, but was found not to be useful in this context.

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An Examination of Age-Related Stereotypes and the Linguistic Intergroup Bias Using Two Measures

Stereotypes and prejudice have been a major concern of social psychology for several decades, and research in the area is continuing. In the last 20 years, stereotype research has been extended to linguistics, and the role of language in creating and transmitting stereotypes. One area of relevant research is in the area of linguistic abstractness, specifically in the Linguistic Category Model (LCM; Semin & Fiedler, 1988). The research concerns the abstractness of language that is used to express stereotypes, and the descriptions of behaviors relative to stereotypes. Linguistic abstractness is an important area of study because it can give insight into how thoughts are converted to linguistic statements. Also, the nature of stereotypes and biases can be better understood. The other major reason that the language of stereotypes is being studied is because stereotypes are largely a social phenomenon and language is a primary means of communicating a stereotype. Stereotypical language also may play an important role in stereotype formation and retention. Also, the language of stereotypes gives some insight into the cognitive processes that underly stereotypes.

There are two primary goals of this research. The first is to

develop and test a new measure of linguistic abstractness. This measure is far easier to use and may be more sensitive than the current measure of linguistic abstractness. Also, the proposed measure addresses some of the shortcomings of the current measure, both from a measurement standpoint and a linguistic standpoint. The second goal is to extend the Linguistic Intergroup Bias (LIB; Maass, Salvi, Arcuri, & Semin, 1989) to age-related stereotypes. The Linguistic Intergroup Bias model is a robust linguistic effect present in the language of stereotypes and has been generalized to many different groups and stereotypes. It has not been extended to age-related stereotypes, which have been extensively researched and are consistently present across the population.

Linguistic Abstractness and the Linguistic Intergroup Bias

Linguistic abstractness is one dimension that is currently examined to study how language is used in a social context. Words used in language lie somewhere between being concrete, where a word describes a specific item or action, and abstract, where a word conveys a large amount of inferred information. This distinction is important because more abstract language implies dispositional attribution, whereas concrete language implies situational attribution. For example, an accountant could overlook some crucial information

on an account, causing a mistake. A concrete explanation of the situation could be that the accountant “rushed” through that account, implying that the mistake was due to situational factors. On the other hand, the situation could be described as the accountant “was careless,” implying that the mistake was caused by the accountant's disposition and is therefore likely to occur again. The second example uses more abstract language than the first example. The measure of linguistic abstractness can be used to find differences between descriptions of different social targets.

Traditionally, linguistic abstractness is measured using the LCM, developed by Semin and Fiedler (1988). According to Semin and Fiedler, the definition of abstractness in the LCM is the degree of subjectivity and permanence that a word conveys. This method generates a score for a stretch of discourse by counting the number of adjectives and different categories of verbs. The most concrete verb is a descriptive action verb (DAV), which describes an action without making any inferences about that action. An example would be “run.” Interpretive action verbs (IAV), which describe an action that requires an inference, are more abstract. This includes verbs like “swindle.” State verbs (SV) describe a relationship between two things, such as “like.” These are the most abstract verbs. DAVs describe an

objective, impermanent action, while SVs and adjectives describe subjective states of being that have some degree of permanence. IAVs fall somewhere in between, but have a level of subjective inference greater than that of DAVs. Finally, adjectives are considered the most abstract words in the LCM. Using these categories, a composite score can be constructed for a written transcript by assigning a score of one to four based on the relative abstractness of the category, with DAVs being 1 and adjectives being 4. These scores are then summed and divided by the number of scored words in a transcript, yielding a mean abstractness score ranging between 1, meaning extremely concrete, and 4, meaning extremely abstract.

Linguistic Category Model Research using the Linguistic Intergroup Bias

Linguistic abstractness has important psychological consequences, particularly in terms of stereotypes. The most common way that linguistic abstractness has been studied is the LIB, which is the tendency for positive in-group and negative out-group behaviors to be described as more abstract than negative in-group and positive out-group behaviors. This is commonly assessed using the LCM. One of the most important set of studies demonstrating the use of the LCM for studying the LIB was conducted by Maass, Salvi, Arcuri, and

Semin (1989). In the first two studies, members of Italian horse racing clubs cartoons viewed depicting either their own club members and rival club members performing either a socially desirable or a socially undesirable action. In the first experiment, participants selected a description from pre-written sets that were equivalent in meaning, but varied in linguistic abstractness based on the LCM. The reason this was done was to determine if the abstractness of the responses that were chosen varied based on the group affiliation of the actor and whether the action was positive or negative. In the second experiment, respondents described the action that was being performed in each cartoon in their own words. In both studies positive in-group behavior and negative out-group behavior were described more abstractly than negative in-group behavior or positive out-group behavior, both when selecting from a set of pre-written responses and when giving an open-ended response. In a follow-up experiment, participants rated how much information the statements used in the first study conveyed about the protagonist, and how likely the person was to repeat the action in the future based on the statement. Both the amount of information conveyed and the likelihood of a repeat action were positively correlated with the abstractness of the statement. The third study is one of the best

examples of support for the construct validity of the LCM.

The Maass et al. study is also one of the most important studies establishing the LIB. In the first two experiments, descriptions of positive behaviors by members of a person's own horse racing club and negative behaviors by members of a rival horse racing club were more abstract based on the LCM than descriptions of negative behaviors by members of their own horse racing club and positive behaviors by members of a rival horse racing club. These results are entirely consistent with the pattern described by the LIB.

This effect has been replicated using regional identification and behavior expectancy (Maass, Milesi, Zabbini, & Stahlberg, 1995). After a pilot study determined stereotypical behaviors for northern Italians and southern Italians, a series of studies was performed to see if valence or stereotype consistency were the primary factors in the LIB. In the first study participants read a set of vignettes, each about a northern or southern Italian who performed either a positive or negative behavior that was either consistent or inconsistent with the stereotype. They then chose a description from a set of four pre-written descriptions that varied on their abstractness based on the LCM. The participants chose more abstract descriptions for the stereotype-consistent actions than for the stereotype inconsistent

actions. Ratings did not differ by group affiliation of the participant or the valence of the action.

In the second study, participants evaluated six cartoons, three of which depicted positive behaviors, and three of which depicted negative behaviors. Half of the participants imagined the target was their best friend, while the other half was told to imagine the target was their worst enemy. The participants chose among four responses varying in abstractness, in a manner similar to that of the first study. Participants chose more abstract answers when describing positive behaviors performed by their best friends and negative behaviors performed by their worst enemies.

The third study looked at four factors: behavioral expectancy based on a given trait (sociability vs. intellectualism), valence of expectancy (positive vs. negative), whether the expectancy was on the individual or group level, and whether the displayed behavior was consistent or inconsistent with the expectancy. First, a description of a person was used to induce the expectancy. After that, participants viewed a cartoon depicting a behavior that was congruent with one of the expectancies, while incongruent with the other. Once again, participants chose from four responses, based on the LCM levels of abstractness. This was followed by a manipulation check to ensure

the participants remembered the induced expectancy. The only significant finding was that expectancy congruent behaviors were described more abstractly than expectancy incongruent behaviors. These studies suggest that the LIB is based on expectancies, rather than intergroup processes. Accordingly, differences in linguistic abstractness due to beliefs and expectancies are called the Linguistic Expectancy Bias (LEB).

Typically, studies looking at the LIB and LEB use a specific design. In most studies, participants see a depiction of an ambiguous behavior, and select one response from four responses that vary in abstractness based on the LCM criteria. However, some studies have employed the LCM to score written transcripts, such as short open-ended responses, in lieu of pre-written responses (Maass et al., 1989; Schnake & Ruscher, 1998; Beukeboom & Semin, 2006). The LCM also has been used is to score language in archival news excerpts (Anolli, Zurloni, & Riva, 2006). In addition to measuring the abstractness of responses, varying the abstractness of questions has also been employed (Semin & De Poot, 1997). However, there is no published research to date that has used the LCM to score responses to general, open-ended prompts.

Based on this and other research, the LIB has been generalized

to demographic groups, such as gender (Fiedler, Semin, & Finkenauer, 1993), political groups (Rubini & Semin, 1994; Anolli et al., 2006), and racial groups in crime reports in the media (Gorham, 2006). Also, the LIB has been shown to correlate with implicit prejudice (von Hippel, Sekaquaptewa, & Vargas, 1997). Based on all the existing evidence, the LIB is generally expected to appear wherever stereotype driven language is used (Semin, 2008). Many stereotypes have been studied using the LIB. One that has not been studied in this context is stereotypes of older adults. These stereotypes have been extensively studied in other ways, and it has been demonstrated that stereotypes of older people are more negative than stereotypes of younger people.

The Refined Aging Semantic Differential

One measure that has been used for evaluating attitudes towards older adults is the the Aging Semantic Differential Scale (Rosencranz & McNevin, 1969) which is based on the Semantic Differential Scale (Osgood, Suci, & Tannenbaum, 1957). It has three factors, which are instrumental-ineffective, autonomous-dependent, and acceptability-unacceptability. The first two factors are related to competence, while the acceptability-unacceptability is a common evaluative measure. However, later analyses found problems with the

three-factor model (Gekoski, Knox, & L. E. Kelly, 1991; Holtzman, Beck, & Kerber, 1979; Intrieri, von Eye, & J. A. Kelly, 1995). This has resulted in several other models being proposed.

The Aging Semantic Differential scale was updated by Polizzi (2003) to improve the psychometric properties of the measure. Eighty-eight pairs of adjectives were tested, which resulted in 66 pairs loading significantly on four factors. These factors are attitude, intelligence/importance, health/confidence, and physical appearance. A follow-up study has supported the increased validity of the attitude subset of items (Iwasaki & J. A. Jones, 2008), but the rest of the subsets have not been examined by other sources. However, these constructs are consistent with currently recognized aspects of age-related stereotypes.

Age-Related Stereotyping

The common term for evaluative judgments made solely on the basis of age is known as ageism (Butler, 1969). There is some debate as to when old age begins, because most research on ageism is based on categorizing adults as either young, middle-aged, or old (Kite & Wagner, 2002). People tend to think that middle age starts around 40, and old age starts around 60 (Best & Williams, 1996). However, it is important to note that the operationalization of age groups can vary

greatly between studies.

Ageism has multiple aspects that are measured a number of ways. Studies generally fall into one of five categories, the first three of which are based on Eagly and Chaiken (1993). The evaluative studies look at affective attitudes towards older adults. This measures whether people have a generally positive or negative attitude towards older people, without looking at a specific trait or behavior. This is typically measured using the Aging Semantic Differential (Rosencranz & McNevin, 1969) or a similar measure. The age-related stereotype category include studies that measure the extent to which stereotypical age-related traits are seen in older people. This would include personality traits, like being cranky or stubborn. The behavior measures are aimed at how people act towards older adults. This is done by observing how participants act towards a target, such as whether they help an older woman across the street. The two other components were derived from later studies, and add to the understanding of ageism. Competence is a participant's perception of older people's abilities (Cuddy & Fiske, 2002). Specifically, this refers to mental ability and whether older adults have associated stereotypical limitations, such as having a poor memory. Finally, appearance measures target how a participant perceives the physical

appearance of older people (Fiske, 1998). This includes physical traits, such as clothing or looking sickly.

There are other factors that need to be considered when studying ageism. One of the most important is known as the double standard of aging. This is the idea that aging occurs at a younger age for women and has a greater impact. Most of the research has been done on the appearance of older women and older men (Harris, 1994). However, older women are viewed as more competent than older men (Kite, Stockdale, Whitley, & Johnson, 2005). Another factor is whether an older person falls into a subgroup of older people. For example, a grandmother is going to be seen as differently for a older conservative male. This can cause a person to be either positively or negatively stereotyped based on this subgroup identification (Hummert, Garstka, Shaner, & Strahm, 1994).

A meta-analysis conducted by Kite and colleagues (Kite et al., 2005) revealed that both positive and negative stereotypes of old people exist for people of all age ranges, and that stereotypes of older people are more negative than stereotypes of younger people. Another important finding is that the valence of the stereotype is dependent on the context. Stereotypes are less negative when the target is a specific person, rather than a generic person or a

population. This is likely due to a tendency to use generalities when describing a group rather than an individual. Also, the older the rater, the less negative the stereotype, although the stereotype exists regardless of respondent age. In this sense, almost everyone, regardless of age, stereotypes older people. Studies that use a within-subject design demonstrate a bigger difference in negative stereotypes that exists toward younger and older people when compared to a between-subject design.

The cognitive aspects of age-related stereotypes also need to be addressed, because of the cognitive nature of language. One cognitive mechanism behind stereotypes is that of schemas, which are cognitive structures used to organize information in the mind. Stereotypes are schemas that hold information about different groups of people, which in turn inform how people view people in those groups (Schneider, 2004). Other relevant phenomena on stereotyping within the context of ageism are the outgroup homogeneity effect (Linville, Fischer, & Salovey, 1989), which is the tendency to see outgroups as more homogeneous than ingroups, and the ultimate attribution error (Pettigrew, 1979), which is the tendency to overestimate the influence of traits held by group members and underestimate the influence of situations. The outgroup homogeneity

effect results in younger people seeing older people as more homogeneous than younger people, which results in more stereotyping. The ultimate attribution error increases the degree to which younger people attribute behaviors to dispositional factors, especially stereotype-consistent dispositional factors, rather than situational factors.

The LIB has not been used to study age-related stereotypes, but the robustness of both age-related stereotypes and the LIB suggest that the LIB exists in age-related stereotypes. Confirmation of the LIB in age-related stereotypes would add further support to the LIB, and potentially add to understanding age-related stereotypes.

Current Research

The current lack of LIB research on age-related stereotypes offers an opportunity to extend the current research in both areas. There is reason to believe that the LIB can be generalized to age-related stereotypes. Furthermore, there are shortcomings of the LCM that can be addressed by establishing the validity of a new measure of linguistic abstractness. This could either provide a finer measure of linguistic abstractness or possibly demonstrate that linguistic abstractness is a multi-faceted construct. The current research seeks to address all of these areas, by both looking for LIB effects in age-

related stereotypes, and by comparing a new measure of linguistic abstractness to the LCM.

Criticism of the Linguistic Category Model

One major criticism of the LCM is the exclusion of nouns (Carnaghi et al., 2008). Carnaghi et al. showed that nouns can convey a trait to a greater degree than equivalent adjectives when nouns are used as descriptors, such as “benefactor” or “jerk”. Based on this, Carnaghi et al. proposes that nouns used in this manner should be treated as more abstract than adjectives. Previous researchers have used nouns as a fifth category in the LCM has been used in research before (Anolli et al., 2006).

There are several more shortcomings to using the LCM to measure linguistic abstractness. First, the LCM does not address other word types that could be used to measure linguistic abstractness. All words could have an impact on linguistic abstractness, regardless of type of word. Second, the LCM does not distinguish between adjectives that are relatively abstract or concrete. For example, the adjectives “tall” and “cold” are more concrete than “ethical” or “biased” because the first two are based on more concrete inferences. Third, the LCM only considers syntax insofar as it can be used to determine a word's syntactical category.

Syntax may have a impact on abstractness, but this has not been explored due to a lack of theory.

Measuring Linguistic Abstractness with the MRC2 Psycholinguistic Database

Due to the shortcomings in the LCM, there is a need to develop better measures of linguistic abstractness. Fortunately, there is a large amount of archival psycholinguistic data that has not been explored as a possible basis for a new measure of linguistic abstractness. The Medical Research Council Psycholinguistic Database version 2 (MRC2) is a database containing 98,538 different words and quantitative dimensions of those words (Coltheart, 1981; Wilson, 1988). One of these is concreteness, compiled from three different studies that used a similar methodology (Paivio, Yuille, & Madigan, 1968; Toglia & Battig, 1978; Gilhooly & Logie, 1980). These studies examined that concreteness is how much something can be experienced using senses. Toglia and Battig (1978) used “carpet” as an example of a concrete word, and “ambiguous” as an example of an abstract word. People rated lists of words on a scale from 1 (extremely abstract) to 7 (extremely concrete) using scannable bubble sheets. Each word was rated by between 28 and 128 people, depending on the study or studies that included the word. These

results were merged and multiplied by 100 (presumably because integers were more easily handled by early computers), creating a scale of 100 to 700 for 8,004 entries in the database. However, only 4,296 of the entries are unique, as a word has an entry for each part of speech for which it can be used. The concreteness scores are the same for all of the entries of any word.

The concreteness scores can be used to give scores to written transcripts by finding the mean score for all words that are in the MRC2 dictionary. This score is called Perceived Word Abstractness (PWA). However, using all the words in a transcript to find a mean may not be appropriate. Many words, such as “the”, “and”, and “since,” are used primarily for grammatical reasons and most of these words have low concreteness scores. Pronouns, articles, prepositions, and conjunctions are among these, and while they may have an effect on abstractness, this effect is context dependent. Because the words are scored in a context independent way, including them would likely cause a regression towards the abstract end of the scale, independent of the actual abstractness of a transcript.

In addition to word type, a simplified classification is included for most words, known as primary word type (D. Jones, 1963). These consist of adjective, noun, verb, and other, which is used for all words

that don't fall into one of the first three categories. Words are categorized based on how they are most commonly used. By using only words with a primary word type of noun, adjective, and verb, words that are not primarily used as nouns, adjectives or verbs are left out. This ensures that words used for grammatical purposes are excluded, and the words that comprise the semantic content of the sentence are scored. This reduces the number of words in the dictionary to 3954 unique entries.

The operational definition of abstractness used in the MRC2 is different than the one used in the LCM, but there is enough conceptual similarity between the two definitions that the PWA could be a valid alternative. By comparing the results of the LCM and PWA for the same transcripts, the validity of the PWA could be established.

The PWA addresses some of the shortcomings of the LCM. First, it is an interval scale as opposed to an ordinal scale, which allows for greater sensitivity of the measure. Second, it scores nouns in addition to verbs and adjectives, which may increase the validity of the measurement. Third, the PWA scores can differentiate between words of the same type in the LCM that may be relatively different in abstractness. This is primarily an improvement in the scoring of adjectives, as they can vary significantly in abstractness. For

example, the adjective “cold” is more concrete than the adjective “humble”.

The primary shortcoming of the PWA is that it evaluates the words in a context-independent way. Further development of the PWA could allow measurement of the effects of certain modifier words, such as adverbs and articles, on verbs, nouns and adjectives. Because the use of context in the LCM is minimal, this is not a significant weakness of the PWA relative to the LCM.

This study tests two main hypotheses. The first hypothesis is that the linguistic intergroup bias can be extended to attitudes towards older adults. This would manifest as more abstract language, as defined by the LCM, for negative descriptions of older adults and positive descriptions of younger adults, and more concrete language for positive descriptions of older adults and negative descriptions of younger adults. The second hypothesis is that the perceived abstractness of words can be used to measure the linguistic intergroup bias. This would be PWA scores that are consistent with the LIB hypotheses that were previously mentioned.

Method

Participants

One hundred and eighteen undergraduate students (78 female,

40 male) in the Ball State University Psychological Science research pool participated to partially fulfill a course requirement. The mean age of the participants was 20.1. All people included were native English speakers.

Materials

The first part of the study was a study description (Appendix A), which explained the purpose of the study, along with the rights of participants. Next, participants reported their age, sex, and ethnicity. The second part of the study was a description of the open-ended prompt task:

For your next task, you will be asked to describe a typical person who is part of a specific group. You can write about any aspect of that person that you think is relevant, such as perceptions, attitudes or behaviors. Please be as complete and thorough as possible. Each answer should be at least 100 words long. There are four different prompts, with the first one on the next page. Please read over each prompt carefully before responding.

The four prompts ask what the participants like and dislike about typical 19 year-old males and typical 80 year-old males (Appendix B). The order of the prompts was counterbalanced.

The third part of the study was Polizzi's Refined Aging Semantic Differential (Appendices B & C), administered twice, once using a typical 19 year-old male as the target, and once using a typical 80 year-old male as the target. The order of the two targets was counterbalanced.

Procedure

The study was administered in a lab on computers, using an Internet-based survey administration website. Upon arrival, participants reported their name so that participation credit could be awarded. Next, they sat at a computer and waited for further instruction. Five minutes after the scheduled start time, or after all the participants had arrived, the experimenter closed the door in the lab. Next, the experimenter explained:

The purpose of this study is to assess perceptions of different people. You will be completing a survey on your computer. Please read all the instructions for every section carefully. You can take up to forty-five minutes to complete the survey. All responses are anonymous, and once everyone has completed the survey, I will dismiss everyone. Does anyone have any questions? If you have any questions or problems while completing the survey,

please let me know. Please begin.

All computers already had the survey website open. The participants first read the study description, and reported their age, sex and ethnicity. Next they were given the open-ended response task. This was followed by the Refined Aging Semantic Differential task. The order of all targets was counterbalanced across different experimental conditions. Finally, they were sent to a “Thank you for participating” page with the experimenter's contact information.

Once all participants had completed the survey, the experimenter asked “Is anyone not done with the survey?”. If no one responded, the experimenter said:

Thank you for participating. I have given you credit for participation. Does anyone have any questions or comments about the study? If you have any questions or comments, please see me before you leave. Have a good day.

The experimenter ensured that any questions the participants had were answered before they left.

Responses were downloaded and converted to usable file formats. Responses were checked to ensure that the participants followed the instructions. Data from participants who did not follow

instructions on one or more of the tasks (i.e. irrelevant responses to open-ended prompts) were to be discarded, but no responses met this criterion.

Results

Perceived Word Abstractness Ratings

PWA scores for the statements were calculated using a short program written in the “Python” programming language (Appendix D). It was run using a dictionary file derived from the abstractness data contained in the MRC2 Psycholinguistic Database (Coltheart, 1981). The program converts each transcript into a list of words, including duplicates. It then compares each word in the list to the words in the dictionary. If the word is in the dictionary, it is assigned the corresponding score. After all the words in the list had been compared to the dictionary, a mean score for the transcript was calculated. After all the transcripts were processed, the program wrote the filenames of the transcripts and their corresponding means to a comma delineated spreadsheet (.csv).

Linguistic Category Model Coding

Each statement was coded using the Linguistic Category Model Manual (Coenen, Hedeboew, & Semin, 2006), with the criteria that all verbs and adjectives that carry semantic weight were scored. For

example, the sentence “I think that 80 year-olds drive slow” would be coded with think as 3, drive as 1 and slow as 4, resulting in a score of 2.67. All statements were coded by the author, and forty randomly selected statements were verified by an independent rater. The forty statements contained 732 semantically meaningful verbs and adjectives, which both raters agreed on. There was a 96% agreement rate, yielding a Cohen's Kappa of .94 and a correlation of $r = .98$ ($p < .001$). This would indicate that there were no significant discrepancies in the LCM coding.

Manipulation Check

The Linguistic Inquiry and Word Count program (Pennebaker, Booth, & Francis, 2007) was also used on the open-ended responses to obtain other quantitative measures, including word counts and usage rates of different types of words. Usage rates were calculated by determining the percentage of the words in a statement that fell within a given category. The two most important categories for this study were positive and negative emotion words, including good, bad, like, dislike, love, and hate. These were used to determine whether the like-dislike manipulation worked. Other word usage rates were not used in analyses, because they were not theoretically meaningful.

As a manipulation check, a 2 (target age) x 2 (like-dislike)

repeated measures analysis of variance (ANOVA), was performed with emotional valence as the dependent variable. Emotional valence was the percentage of positive emotion words minus the percentage of negative emotion words. As was expected, a significant difference was found for like-dislike, $F(1,116) = 190.40, p < .001, \eta^2 = .62$, with the like condition ($M = 8.09, SD = 4.86$) being more positive than the dislike condition ($M = -.43, SD = 3.16$), but an effect was also found for the target age, $F(1,116) = 15.54, p < .001, \eta^2 = .12$, with statements for older targets ($M = 3.15, SD = 2.93$) being less positive than statements for younger targets ($M = 4.51, SD = 3.06$).

Linguistic Abstractness

Two 2 (target age) x 2 (like-dislike) x 2 (participant sex) mixed model ANOVAs with target age and like-dislike as within-subjects factors and participant sex as the between-subjects factor were run. LCM and PWA scores were used as the dependent variables (Tables 1 and 2). There was a significant interaction for the LCM scores, $F(1,116) = 15.82, p < .001, \eta^2 = .12$. Also, a significant effect for age was found, $F(1,116) = 4.72, p = .03, \eta^2 = .04$, with the statements about the younger target ($M = 3.14, SD = .22$) being more abstract than statements about the older target ($M = 3.07, SD = .33$).

Participant sex did not have a significant effect. Two contrasts were

performed to determine the nature of the interaction; the like and dislike statements were compared for the old and young targets. A significant difference was found between the like and dislike statements for the old targets, $F(1,116) = 4.30$, $p = .04$, $\eta^2 = .04$, with the like statements ($M = 3.02$, $SD = .49$) being less abstract than the dislike statements ($M = 3.13$, $SD = .30$). The difference for the young conditions was also significant, $F(1,116) = 17.30$, $p < .001$, $\eta^2 = .13$, with the like statements ($M = 3.22$, $SD = .30$) being more abstract than the dislike statements ($M = 3.07$, $SD = .26$). This supports the hypothesis that the LIB can be extended to older adults.

No significant differences were found for PWA scores, including main effects for target age, $F(1,116) = 2.12$, *ns*, like vs. dislike $F(1,116) = .144$, or participant sex, $F(1,116) = .00$, *ns*. Also, there was no interaction between the target age and like-dislike, $F(1,116) = .21$, *ns*. Results revealed no significant correlations between PWA and LCM scores for the same response, which seem to indicate that they are not measuring the same thing (Table 3). This does not support the hypothesis that PWA can be used as a measure of linguistic abstractness for studying the LIB.

Semantic Differential Scores

The evaluative measure from the Refined Aging Semantic

Differential was used, as it represented the construct most related to liking/disliking. A composite score was also computed by taking the difference between the evaluative measure towards the older target and the younger target, because it is theoretically plausible that the difference may be a more useful factor. LCM and PWA scores were correlated with the three semantic differential scores (Tables 4 and 5). The evaluative measures from the Aging Semantic Differential scales did not significantly correlate with PWA or LCM scores, nor did the difference between the scores. This would indicate that the attitudes measured by the semantic differential scale are different than those elicited by the prompts. The only correlation that occurred that made theoretical sense was the correlation between the evaluative scores for the two targets $r = .03, p < .001$.

Correlations between the semantic differential scores and the emotion word valence were also examined. There were no significant correlations that made theoretical sense, except the correlation between the young-dislike statement and the semantic differential score towards the young target. Overall, this seems to indicate that emotion word use is independent of evaluative attitudes as measured by the semantic differential scores.

Other Findings

A 2 (target age) x 2 (like-dislike) repeated measures ANOVA was performed on the statements, with number of words as the dependent variable. A significant interaction was found, $F(1,116) = 7.82$, $p < .01$, $\eta^2 = .06$. Tukey's HSD was used, which found that the word count for the young-dislike condition ($M = 97.92$, $SD = 43.63$) was significantly higher than the old-dislike ($M = 89.57$, $SD = 45.33$) and the young-like ($M = 87.25$, $SD = 41.02$) conditions, but not significantly different from the old-like condition ($M = 91.76$, $SD = 39.79$).

Discussion

Linguistic Intergroup Bias and Ageism

The results of this study support the extension of the LIB to older people. Consistent with previous research (Maass et al., 1989), participants used more abstract language when talking about what they liked about in-group members, the 19 year-old males, versus what they disliked. The opposite holds true for the out-group members, the 80 year-old males. Based on this research, the LIB can therefore be generalized to old-young group distinctions.

The results are also interesting because they supports the hypothesis that young adults see the positive aspects of their peers as

dispositional, while the negative aspects are seen as situational. Based on the definition of linguistic abstractness used in the LCM (Semin & Fiedler, 1988), the higher linguistic abstractness in the positive statements about their peers implies permanence. This also demonstrates that younger people view the negative aspects of older people as more dispositional than the positive aspects.

Furthermore, the difference between statements about older and younger targets in the overall valence of the language is consistent with current research on ageism (Kite et al., 2005). The language used to describe older men is more negative than the language used to describe young males, regardless of whether the prompt was like or dislike. This supports the theory that young adults have more negative views of older adults than younger adults.

Additionally, the lack of correlation between the evaluative score from the Aging Semantic Differential scales and the LCM scores could be caused by two things. First, it could be due to differences in implicit and explicit attitudes, as the writing measure had very little face validity compared to the semantic differential scales. Attitudes operating below consciousness may be causing the differences in responses to the open-ended prompts. This would mean that the open-ended prompts may be a means of accessing implicit attitudes.

Second, it could be that attitudes and the relative permanence of those attitudes are independent. Namely, someone may have a very negative attitude of 19 year-old males, which they see as situational, while a weaker negative attitude toward 80 year-old males is seen as more permanent. The lack of meaningful correlations between the semantic differential scores and the emotional valence of the statements further supports the idea that the semantic differential and the statements are measuring different things, although results do not support either possibility over the other.

Perceived Word Abstractness

Overall, the PWA scores do not appear to be a good measure of linguistic abstractness as defined by the LIB (Maass et al., 1989), as the scores neither demonstrated the LIB, nor did they correlate with LCM scores. This possibly happened because all words that were in the dictionary were scored, regardless of whether they carried semantic weight. This caused a lot of structural words that were not semantically meaningful to be scored, such as auxiliary verbs. The result is that a lot of irrelevant variance was introduced based on a given participant's writing style.

Another possibility is that subjective word-level abstractness independent of context is fundamentally different than the context-

dependent operationalization of the LCM (Semin & Fiedler, 1988).

Due to the context-dependent nature of the LCM, it is not possible to properly assign LCM ratings to many of the verbs in the MRC2, which makes it impossible to calculate a correlation between the two measures. Because this is the case, then there may be some use for PWA in psycholinguistic research in the future, but currently there are no theories concerning perceived abstractness.

There may be other uses for PWA, such as creating predictive models or for uses in artificial intelligence. However, the results of this experiment seem to demonstrate that PWA is not an appropriate substitute for the LCM, and by extension should not be used for research on the LIB and LEB. Also, it should be noted that the scores in the MRC2 (Coltheart, 1981) that were used for calculating PWA scores are over 30 years old, and that may undermine the validity of those scores. It may be advantageous to apply an analogous scoring method using a new set of abstractness ratings.

Methodological Findings

This study revealed that research on the LIB can be conducted using general open-ended prompts, in addition to the previous methods (Maass et al., 1989; Schnake & Ruscher, 1998; Beukeboom & Semin, 2006; Anolli et al., 2006; Semin & De Poot, 1997). This is

useful because it allows for attitudes to be measured more broadly than with previous methods. This also demonstrates the LIB is not constrained solely to perceptions of actions. The existing body of research has focused primarily on the abstractness of the language used to describe a depicted action. While open-ended prompts have been used in this context, they have not been used to elicit statements about a person or group in a general sense. Only one previous study has scored general statements, but this was using archival news clips rather than experimental data (Anolli et al., 2006).

It should be noted that this approach has a major disadvantage compared to previous methods, which is that it requires far more coding work than the other methods. There are several things that make the coding more difficult than tasks that ask participants to describe depicted actions. First, there are more words to code per statement. The average amount of coded words per statement in this study was just over 15, while a depiction task would likely have one or two per statement. Second, the complexity of the statements is likely much higher, as many respondents employed complex sentence structures with multiple clauses and elaborate verb phrases. This results in harder-to-code statements, because complex sentences make some of the context-dependent determinations, such as whether

a verb carries semantic weight or which category a verb falls under, more difficult. Also, because the open-ended format allows for more freedom in responses, the effects of poor written responses are exacerbated.

Future Research

There are several ways that this research can be extended. This research only compared 80 year-old males and 19 year-old males, but did not look at older or younger women. The double standard of aging may result in a different effect when male and female targets are compared (Harris, 1994; Kite et al., 2005). Presumably, the effect for older women versus younger women would be more pronounced, given that the perception is aging affects women more than men.

Another possibility is to extend this research to different aspects of stereotypes. This study looked at attitudes in general, but the effects could very well be different if the study focused on more specific areas, such as health, appearance, or competence. This would be especially interesting if measured in the context of perceived gender differences in aging. This may also reveal that for some areas, the positive aspects of older adults are seen as more permanent, and therefore result in more abstract language use.

A third possible extension of this research would be to use a less

open-ended prompt. Open-ended responses increase the difficulty of coding, but it may be possible to alter the procedure to reduce the coding complexity. Rather than using simple open-ended like and dislike prompts, a series of sentence stems could be used. This would reduce the sentence complexity and make the coding much easier. Furthermore, this may have the advantage of being a stronger manipulation.

A fourth possible extension of this research would be to see whether the disconnect between the evaluative scores and the LCM scores is caused by a disconnect between strength and permanence of the attitudes, or if the LIB is a manifestation of implicit attitudes. This could be done by using an implicit association test to determine whether implicit attitudes correlate with linguistic abstractness (Greenwald, McGhee, & Schwartz, 1998).

Finally, it would be interesting to see if these results hold in older populations, by using older adults as participants. Based on existing stereotype research, the LIB towards older adults might be weaker or manifest differently. This could also inform on the disconnect previously mentioned, because if the LIB manifests in roughly the same manner but the valence difference is smaller, then the independence of strength and permanence would be supported.

Conclusion

Overall, this research supports the extension of the LIB to age-related stereotypes. The new PWA measure did not yield interesting results, which indicates that it may have limited utility in psycholinguistic research. The results do raise several questions, which can be explored with further research.

References

- Anolli, L., Zurloni, V., & Riva, G. (2006). Linguistic Intergroup Bias in Political Communication. *Journal of General Psychology, 133*(3), 237-255.
- Best, D. L., & Williams, J. E. (1996). Anticipation of aging: A cross-cultural examination of young adults' views of growing old. In J. Pandey, D. Sinha, & D. P. S. Bhawuk (Eds.), *Asian contributions to cross-cultural psychology*. (pp. 274-288). Thousand Oaks, CA US: Sage Publications, Inc.
- Beukeboom, C. J., & Semin, G. R. (2006). How mood turns on language. *Journal of Experimental Social Psychology, 42*(5), 553-566. doi:10.1016/j.jesp.2005.09.005
- Butler, R. N. (1969). Directions in psychiatric treatment of the elderly: Role of perspective of the life cycle. *The Gerontologist, 9*(21), 134-138.
- Carnaghi, A., Maass, A., Gresta, S., Bianchi, M., Cadinu, M., & Arcuri, L. (2008). Nomina sunt omina: On the inductive potential of nouns and adjectives in person perception. *Journal of Personality and Social Psychology, 94*(5), 839-859.
- Coenen, L. H., Hedeboom, L., & Semin, G. R. (2006). The Linguistic Category Model (LCM). Retrieved from

<http://cratylus.org/uploadedFiles/1151434261594-8567.pdf>

<http://cratylus.org/uploadedFiles/1151434300359-0007.pdf>

Coltheart, M. (1981). The MRC psycholinguistic database. *The Quarterly Journal of Experimental Psychology A: Human Experimental Psychology*, 33(4), 497-505.

Cuddy, A. J. C., & Fiske, S. T. (2002). Doddering but dear: Process, content, and function in stereotyping of older persons. In T. D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons*. (pp. 3-26). Cambridge, MA US: The MIT Press.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL US: Harcourt Brace Jovanovich College Publishers.

Fiedler, K., Semin, G. R., & Finkenauer, C. (1993). The battle of words between gender groups: A language-based approach to intergroup processes. *Human Communication Research*, 19(3), 409-441.

Fiske, S. T. (1998). Stereotyping, prejudice, and discrimination. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology, Vols. 1 and 2 (4th ed.)*. (pp. 357-411). New York, NY US: McGraw-Hill.

Gekoski, W. L., Knox, V. J., & Kelly, L. E. (1991). The factor structure of the aging semantic differential: A failure to replicate

Rosencranz and McNevin. *The Journal of Social Psychology*, 131(4), 593-595.

Gilhooly, K. J., & Logie, R. H. (1980). Age-of-acquisition, imagery, concreteness, familiarity, and ambiguity measures for 1,944 words. *Behavior Research Methods & Instrumentation*, 12(4), 395-427.

Gorham, B. W. (2006). News Media's Relationship With Stereotyping: The Linguistic Intergroup Bias in Response to Crime News. *Journal of Communication*, 56(2), 289-308.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, 74, 1464-1480.

Harris, M. B. (1994). Growing old gracefully: Age concealment and gender. *Journals of Gerontology*, 49(4), 149-158.

von Hippel, W., Sekaquaptewa, D., & Vargas, P. (1997). The linguistic intergroup bias as an implicit indicator of prejudice. *Journal of Experimental Social Psychology*, 33(5), 490-509.

Holtzman, J. M., Beck, J. D., & Kerber, P. E. (1979). Dimensional aspects of attitudes toward the aged. *The Gerontologist*, 19(5 Part II), 91.

- Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1994). Stereotypes of the elderly held by young, middle-aged, and elderly adults. *Journals of Gerontology*, 49(5), 240-249.
- Intrieri, R. C., von Eye, A., & Kelly, J. A. (1995). The aging semantic differential: A confirmatory factor analysis. *The Gerontologist*, 35(5), 616.
- Iwasaki, M., & Jones, J. A. (2008). Attitudes toward older adults: a reexamination of two major scales. *Gerontology & Geriatrics Education*, 29(2), 139.
- Jones, D. (1963). *Everyman's English Pronouncing Dictionary* (12th ed.). London England: Dent.
- Kite, M. E., Stockdale, G. D., Whitley, B. E. J., & Johnson, B. T. (2005). Attitudes Toward Younger and Older Adults: An Updated Meta-Analytic Review. *Journal of Social Issues*, 61(2), 241-266.
- Kite, M. E., & Wagner, L. S. (2002). Attitudes toward older adults. In T. D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons*. (pp. 129-161). Cambridge, MA US: The MIT Press.
- Linville, P. W., Fischer, G. W., & Salovey, P. (1989). Perceived distributions of the characteristics of in-group and out-group members: Empirical evidence and a computer simulation.

Journal of Personality and Social Psychology, 57(2), 165-188.

Maass, A., Milesi, A., Zabbini, S., & Stahlberg, D. (1995). Linguistic intergroup bias: Differential expectancies or in-group protection? *Journal of Personality and Social Psychology*, 68(1), 116-126.

Maass, A., Salvi, D., Arcuri, L., & Semin, G. R. (1989). Language use in intergroup contexts: The linguistic intergroup bias. *Journal of Personality and Social Psychology*, 57(6), 981-993.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning*. Oxford England: Univer. Illinois Press.

Paivio, A., Yuille, J. C., & Madigan, S. A. (1968). Concreteness, imagery, and meaningfulness values for 925 nouns. *Journal of Experimental Psychology*, 76(12), 1-25.

Pennebaker, J., Booth, R., & Francis, M. (2007). *Linguistic Inquiry and Word Count: LIWC 2007*. Austin TX: LIWC. Retrieved from www.liwc.net

Pettigrew, T. F. (1979). The ultimate attribution error: Extending Allport's cognitive analysis of prejudice. *Personality and Social Psychology Bulletin*, 5(4), 461-476.

Polizzi, K. G. (2003). Assessing attitudes toward the elderly: Polizzi's

refined version of the Aging Semantic Differential. *Educational Gerontology*, 29(3), 197-216.

Rosencranz, H. A., & McNevin, T. E. (1969). A factor analysis of attitudes toward the aged. *The Gerontologist*, 9(1), 55-59.

Rubini, M., & Semin, G. R. (1994). Language use in the context of congruent and incongruent in-group behaviours. *British Journal of Social Psychology*, 33(3), 355-362.

Schnake, S. B., & Ruscher, J. B. (1998). Modern racism as a predictor of the linguistic intergroup bias. *Journal of Language and Social Psychology*, 17(4), 484-491.

Schneider, D. J. (2004). *The psychology of stereotyping*. Distinguished contributions in psychology. New York, NY US: Guilford Press.

Semin, G. R. (2008). Stereotypes in the wild. In Y. Kashima, K. Fiedler, & P. Freytag (Eds.), *Stereotype dynamics: Language-based approaches to the formation, maintenance, and transformation of stereotypes*. (pp. 11-28). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.

Semin, G. R., & De Poot, C. J. (1997). The question-answer paradigm: You might regret not noticing how a question is worded. *Journal of Personality and Social Psychology*, 73, 472-480.

Semin, G. R., & Fiedler, K. (1988). The cognitive functions of linguistic

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categories in describing persons: Social cognition and language.

Journal of Personality and Social Psychology, 54(4), 558-568.

Toglia, M. P., & Battig, W. F. (1978). *Handbook of semantic word norms*. Oxford England: Lawrence Erlbaum.

Wilson, M. (1988). MRC Psycholinguistic Database: Machine-usable dictionary, Version 2.00. *Behavior Research Methods, Instruments & Computers*, 20(1), 6-10.

Appendix A: Study Description

Attitudes and Perceptions Survey

In this experiment we are examining how people perceive others. To do this, you will be asked to write about how you perceive different groups of people. You will also be asked to complete a short questionnaire. There are no correct answers for these tasks; we simply want to collect your impressions.

Both of these procedures will be administered via computer. For your participation in the study, you will receive one hour of experimental credit to be applied to your Psychological Science 100 course requirements.

Please be aware that your name will not be associated in any way with your responses. All data will be collected anonymously, and will be kept strictly confidential. Only the investigators listed below will have access to your data. Also, you will be given the opportunity to withdraw from the study at any time without prejudice if feeling uncomfortable. There are no foreseeable potential risks and/or discomforts from participating in this study, but there are potential benefits. Among these is that you will learn first-hand what psychological research entails. Please feel free to ask questions of the experimenter now or at any time during the procedure.

For one's rights as a research subject, you may email irb@bsu.edu or the Coordinator of Research Compliance, Sponsored Programs Office, Ball State University, Muncie, IN 47306, (765) 285-5070.

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Appendix B: Research Materials

1. What is your age?
2. What is your sex?
3. What is your race?
 - American Indian or Alaskan Native
 - Asian or Pacific Islander
 - African American/Black
 - Caucasian/White
 - Latino, Latina/Hispanic
 - Other (please specify)
4. Please take five minutes to describe what you LIKE about a typical 80 year old male. You can include traits, what that person does or doesn't do, and other aspects that you see as relevant.
5. Please take five minutes to describe what you DISLIKE about a typical 80 year old male. You can include traits, what that person does or doesn't do, and other aspects that you see as relevant.
6. Please take five minutes to describe what you LIKE about a typical 19 year old male. You can include traits, what that person does or doesn't do, and other aspects that you see as relevant.
7. Please take five minutes to describe what you DISLIKE about a typical 19 year old male. You can include traits, what that person does or doesn't do, and other aspects that you see as relevant.
8. For each pair of words below, choose a point on the scale below that best describes a typical 80 year old male.
9. For each pair of words below, choose a point on the scale below that best describes a typical 19 year old male.

Appendix C: Word Pairs in Polizzi's Refined Version of the Aging Semantic Differential

Sweet-Sour	Realistic-Unrealistic
Nice-Mean	Successful-Unsuccessful
Kind-Cruel	Meaningful-Meaningless
Cheerful-Crabby	Punctual-Tardy
Tolerant-Intolerant	Correct-Incorrect
Cooperative-Uncooperative	Clean-Dirty
Patient-Impatient	Honest-Dishonest
Fair-Unfair	Organized-Disorganized
Pleasant-Unpleasant	Decisive-Indecisive
Considerate-Inconsiderate	Practical-Impractical
Grateful-Ungrateful	Neat-Messy
Positive-Negative	Strong-Weak
Thoughtful-Thoughtless	Healthy-Unhealthy
Calm-Agitated	Sturdy-Fragile
Unselfish-Selfish	Active-Passive
Friendly-Unfriendly	Productive-Unproductive
Flexible-Inflexible	Fast-Slow
Humble-Arrogant	Confident-Insecure
Satisfied-Dissatisfied	Certain-Uncertain
Trustful-Suspicious	Secure-Insecure
Good-Bad	Fit-Unfit
Happy-Sad	Aware-Unaware
Optimistic-Pessimistic	Self-reliant-Dependent
Hopeful-Despairing	Attentive-Distracted
Safe-Dangerous	Clear-Obscure
Social-Asocial	Complete-Incomplete
Frugal-Generous	Exciting-Dull
Smooth-Rough	Modern-Ancient
Intelligent-Stupid	Young-Old
Wise-Ignorant	Fresh-Stale
Valuable-Worthless	Attractive-Unattractive
Important-Unimportant	Hot-Cold
Experienced-Inexperienced	

Appendix D: Perceived Word Abstractness Program Scoring Code

```
import sys
import os
import string
import math
import csv
def getdict():
    """Builds a dictionary of words and their concreteness
ratings
Returns dictionary"""
    absdict = {' ':0}
    dictfile = open("absdict.csv")
    dictread = csv.reader(dictfile, dialect='excel')
    for x in dictread:
        absdict[x[0]]=int(x[1])
    return absdict
def getwords(file):
    """Creates a list of words from a specified text file in
./docs
Returns list"""
    seperators = (".", ",", "\\", ":", ";", "?", "!", "(", ")", "\n", "\t")
    currentdoc = open(file)
    contents = currentdoc.read()
    currentdoc.close()
    words = contents.split(' ')
    for x in seperators:
        temp = []
        for y in words:
            temp.extend(y.split(x))
        words=temp
    tempx=[]
```


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```
for temp in words:
    entry=""
    for letter in temp:
        if letter not in " .,\\"!?:;()\\n\\t":
            entry += letter
    if entry != "":
        tempx.append(entry)
words=tempx
return words

def getscores(words, dictionary):
    """Determines mean score, standard deviation, number of hits
    and ratio of words that were in the dictionary for a list of
    words based on the dictionary
    Returns int"""
    scores=[]
    for x in words:
        x=x.upper()
        if dictionary.has_key(x):
            if dictionary[x] != 0:
                scores.append(dictionary[x])
    sumscores=0
    if len(scores)!=0:
        for x in scores:
            sumscores=sumscores+x
        mean=int(float(sumscores)/float(len(scores)))
    else:
        mean=0
    return mean
```

Table 1

Linguistic Category Model Scores as a Function of Target Age and Attitude

Target	Like		Dislike	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
80 year-old	3.02	0.49	3.13	0.30
19 year-old	3.22	0.30	3.07	0.26

Table 2

Perceived Word Abstractness Scores as a Function of Target Age and Attitude

Target	Like		Dislike	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
80 year-old	337.68	25.17	337.02	24.47
19 year-old	332.55	21.67	333.86	23.52

Table 3

Correlations between LCM and PWA Scores

Perceived Word Abstractness		Linguistic Category Model			
		80 year-old		19 year-old	
		Like	Dislike	Like	Dislike
80 year-old	Like	0.16	-.015	.223*	.158
	Dislike	-0.05	-.140	-.048	-.043
19 year-old	Like	.014	-.195*	-.127	-.216*
	Dislike	.025	-.019	-.041	-.162

* $p < .05$

Table 4

Correlations between LCM and Semantic Differential Scores

Semantic Differential Score	Linguistic Category Model			
	80 year-old		19 year-old	
	Like	Dislike	Like	Dislike
80 year-old	-.108	.008	-.015	.006
19 year-old	.013	.058	.119	.143
Difference	-.111	-.034	-.099	-.096

Table 5

Correlations between PWA and Semantic Differential Scores

Semantic Differential Score	Perceived Word Abstractness			
	80 year-old		19 year-old	
	Like	Dislike	Like	Dislike
80 year-old	.046	.005	-.001	.020
19 year-old	.006	.018	-.075	.164
Difference	.039	-.008	.052	-.098